Local Chapter Activity Report

at the 11th UNISEC-Global Meeting

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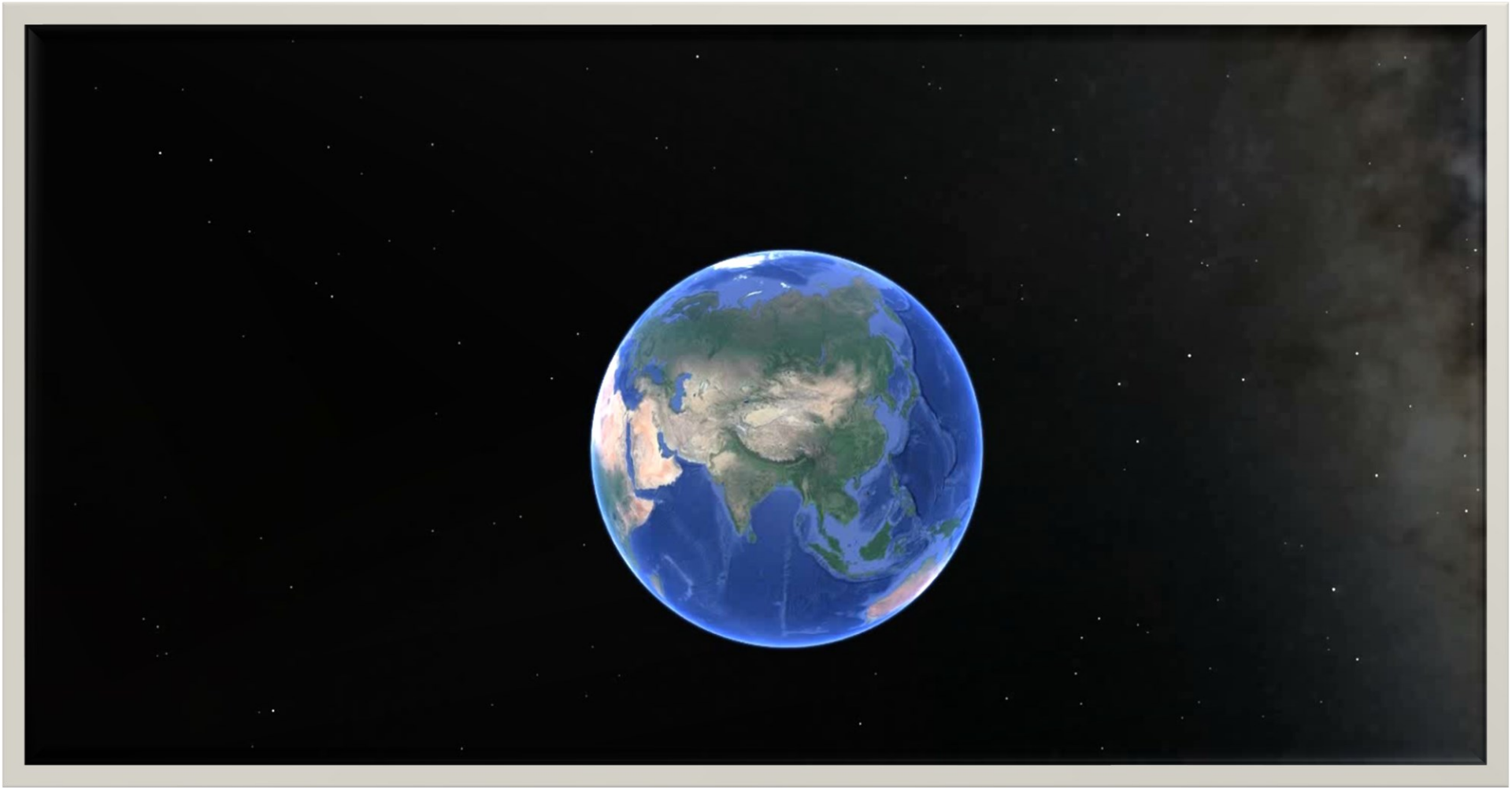


History of Local Chapter Activities

UNISEC GLOBAL
University Space Engineering Consortium

Acknowledgement

This is to acknowledge

UNISEC-Bangladesh

as a Local-Chapter of the UNISEC-Global, due to recommendations made by the Steering Committee, a supreme organ of the UNISEC-Global. This acknowledgement extends one year, effective on November 20, 2014.
Dr. Khalilur Rhaman and Dr.Tarekul Islam are designated as Secretary of UNISEC- Bangladesh on its behalf and a Point of Contact hereafter.

Rei Kawashima
Secretary General,
UNISEC-Global

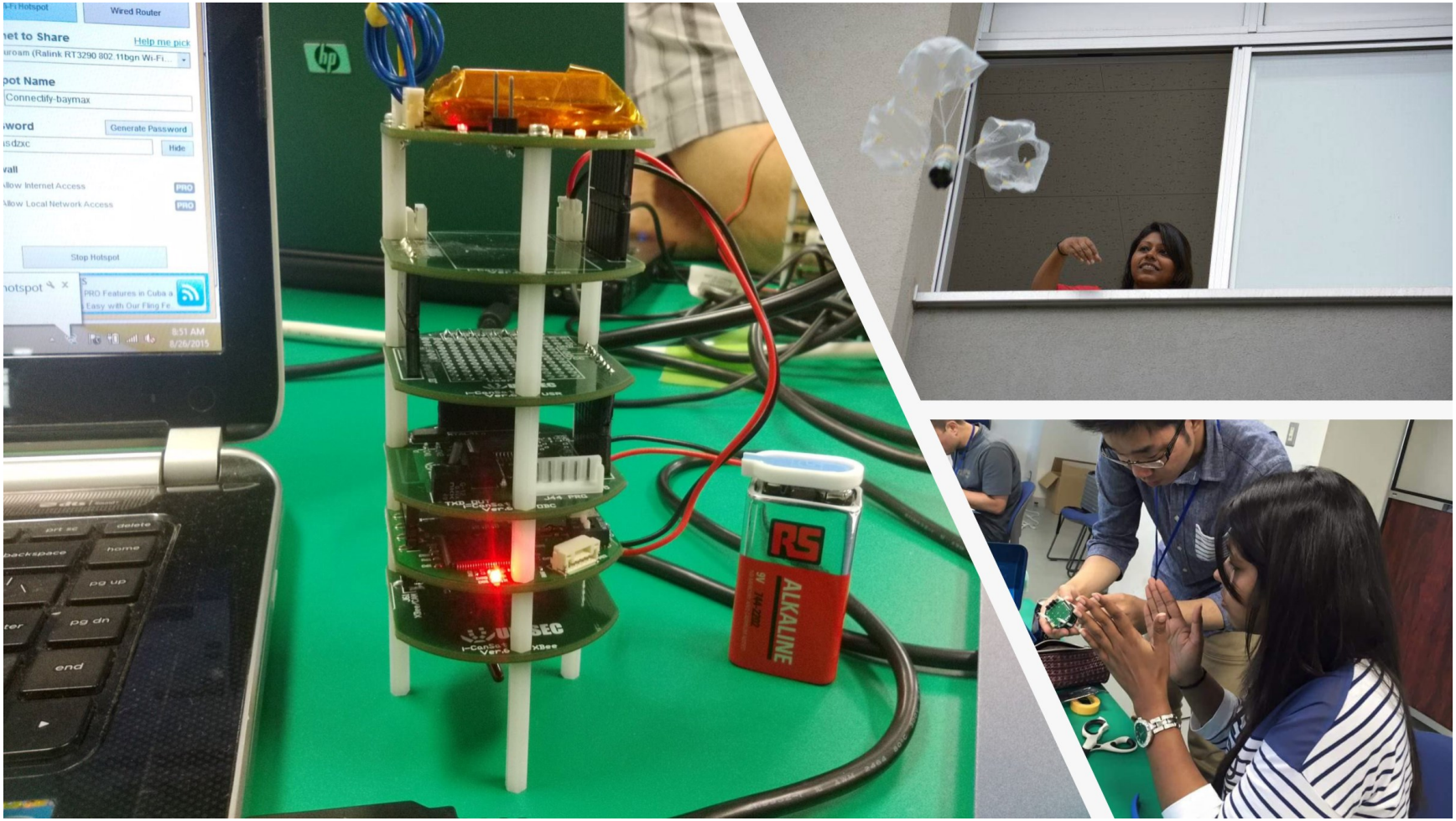
Established in *2014*

CANSAT LEADERSHIP TRAINING PROGRAM GRADUATE

CLTP6 (2015)

RAIHANA SHAMS ISLAM ANTARA

CURRENTLY WORKING AS AN EDUCATOR IN BANGLADESH



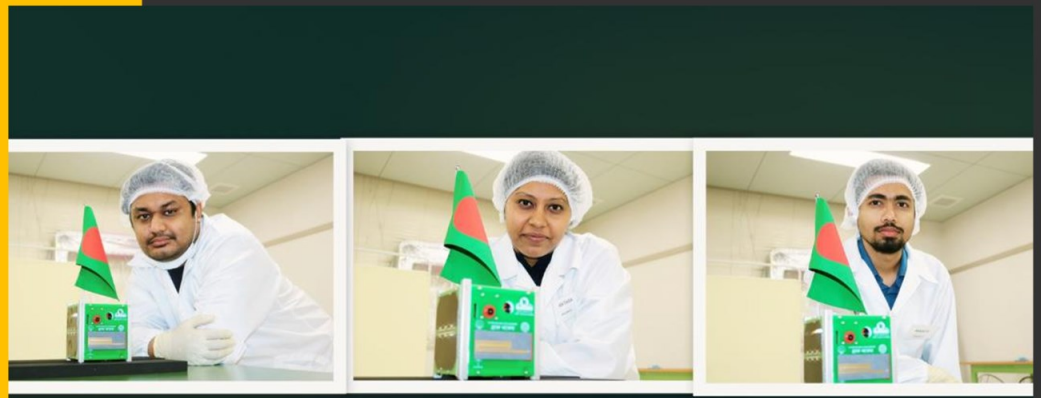
Model Rocket Design, launch and operation 2015

CLTP GRADUATE
2015, 2022, 2023

Launched in 2017

BRAC Onnesha
1st Satellite of Bangladesh

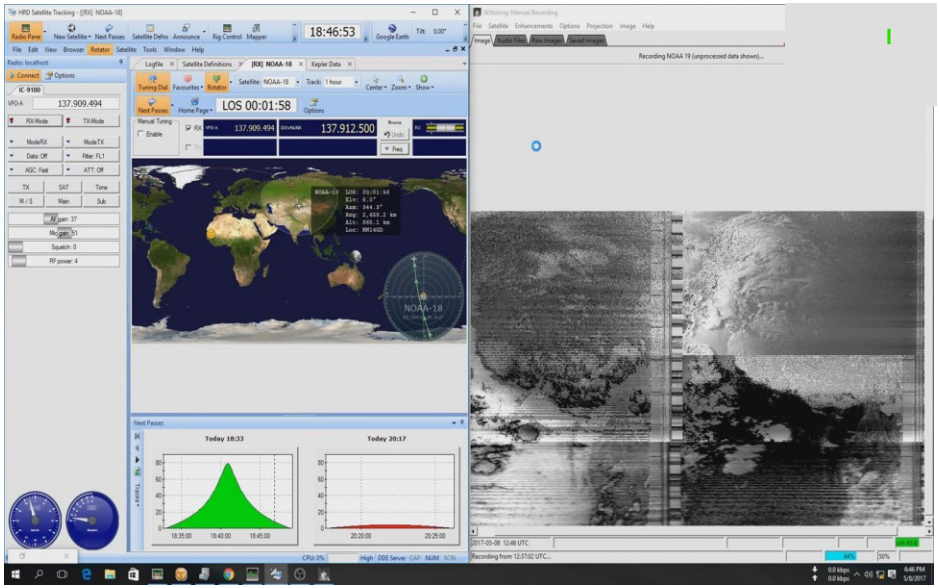
Made by Bangladeshi



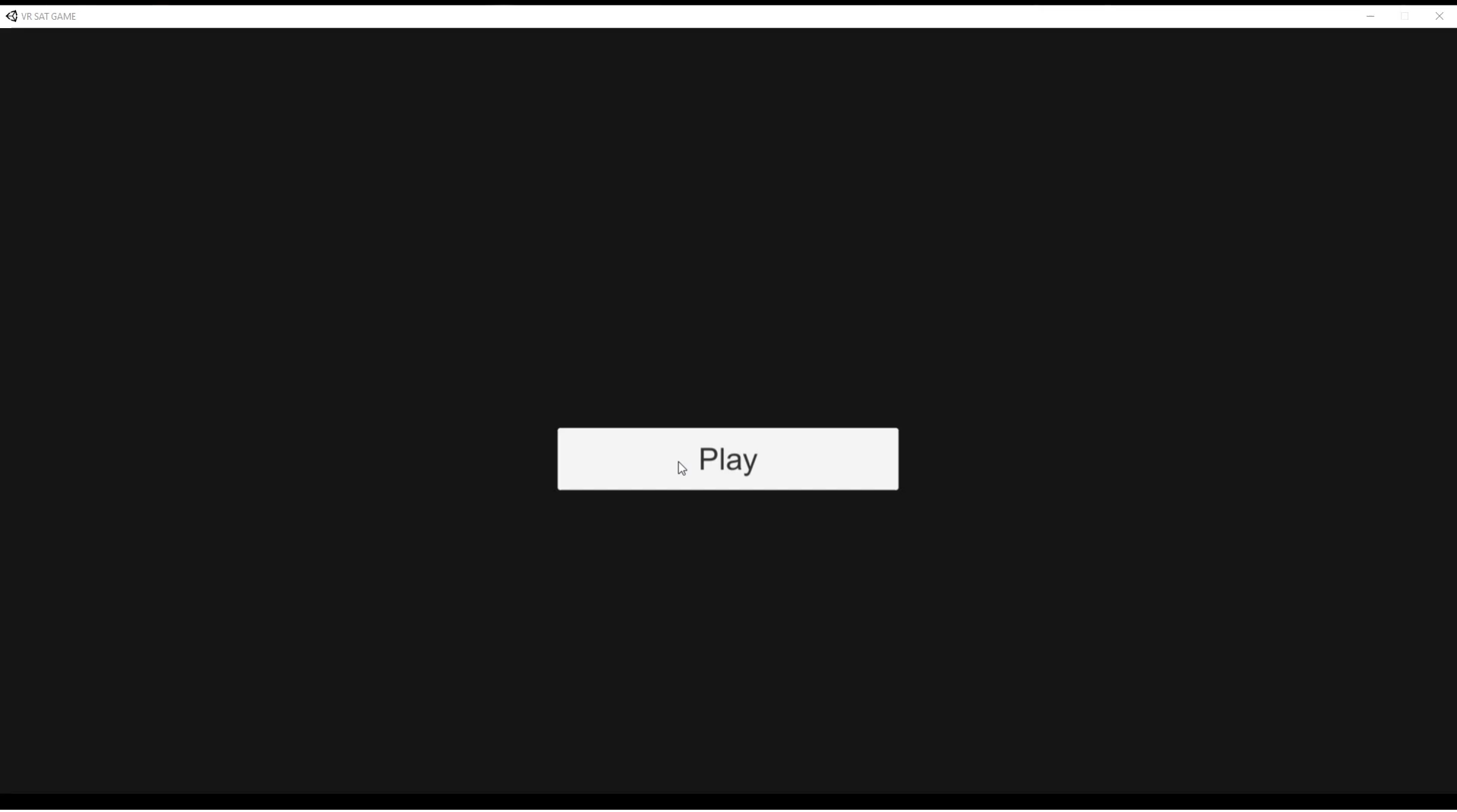
3 Engineers of BRAC Onnesha Satellite.
From Left – Abdulla Hil Kafi, Raihana Shams Islam Antara & Maisun Ibn Monowar

Design, Developed and Tested by Bangladeshi

1st Student built ground station 2017



VR GAME 2021



First International Space Workshop in Bangladesh

4th BIRDS International Workshop, 2019

TimeLine

2015

Model Rocket Design, launch and operation training CLTP 6

2017

Launched into space the **first Satellite of Bangladesh, BRAC Onnesha**

2017

Established **first student-made satellite ground station** in Bangladesh

2018

ACI Youth Award First-Ever **CANSAT workshop, Satellite Mission Idea Contest**

2019

"4th BIRDS INTERNATIONAL WORKSHOP" & Established the **one and only IEEE Aerospace and Electronic Systems Society Chapter** in Bangladesh

2020-21

Design and develop the **first** Space-based **Virtual Reality Game** for Satellite Education And Learning And indigenous **Satellite training KIT design**

2022

IAF Emerging Space Leader 2022, **Bracu *Research Seed Grant 2022***, Bracu Dichari won the perseverance award in ERL2022 CLTP 11

2023-24

IAF Emerging Space Leader 2022, **Bracu *Research Seed Grant 2024***, CLTP 12

UNISEC-Global Activities in 2024-25

- Member Universities: 2
- Students: 30
- POC: 3
- Others（ Corporative members): IEEE AESS, LaSSET

Laboratory of Space Systems Engineering & Technology
School of Engineering, BRAC University

BRACU Student Branch Chapter

Educational Kit

Satellite Training Kit- V1

2020-2021

Satellite Training Kit- V2

2022-2023

Dipto

Dipto is a STEM-based startup that designs affordable nano-satellite training kits to make satellite education accessible.

Achievements:

- Sheikh Jamal Innovation Grant 2024 by ICT Devision: Secured 5th position and received seed fund grant.
- University Innovation Hub Program (UIHP) Cohort 1 : Secured 3rd place and received seed fund grant.

Fig: Sheikh Jamal Innovation Grant

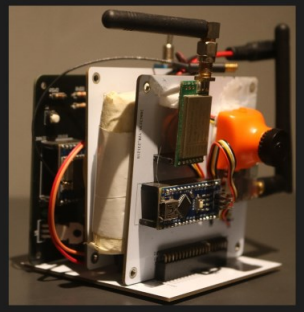


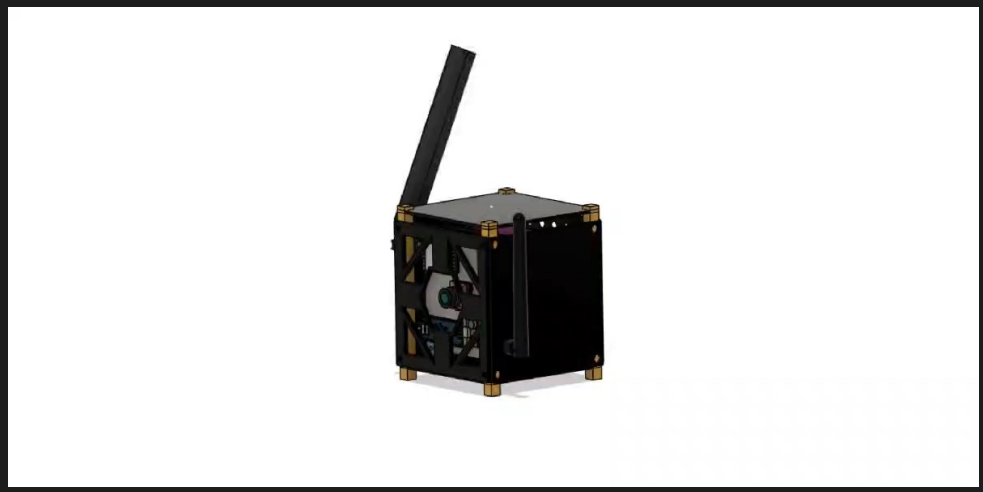
Fig: Training kit developed by Dipto

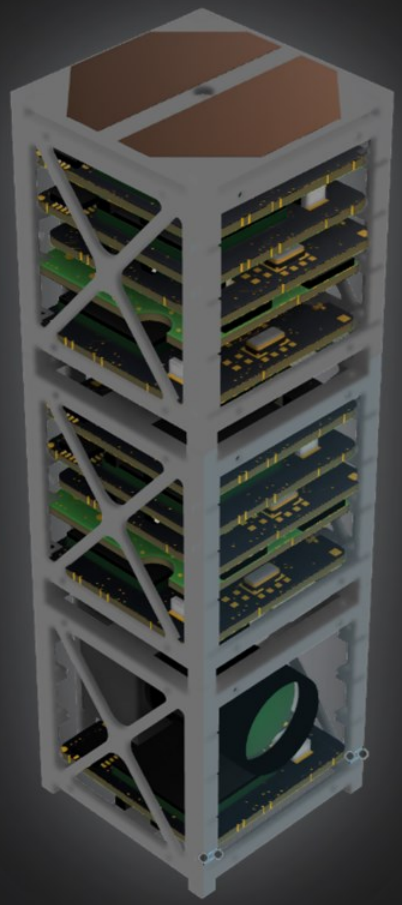

Fig: University Innovation Hub Program

•**Publications**:

- Catalyzing Space Technology Development in Bangladesh: A Space System Engineering Training Initiative, International Astronautical Congress 2024, Milan

- A Low-Cost Satellite Kit to Bridge the Educational and Technological Gap in Developing Countries, International Astronautical Congress 2025, Sydney



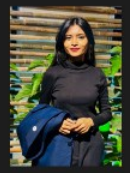


BD-BRACU Mavericks

APSCO CubeSat Competition

Team Lead
Mission Payload
[Camera Mission & SEL]

EPS



Structure & OBC

Team Management

Communication

Ground Station

ADCS

BRACU Diganta

Publications:

- BRACU DIGANTA: An Affordable and Inclusive CanSat Kit for Hands-on Training of Introductory level Students in Developing Countries, International Astronautical Congress 2025, Sydney

Outreach:

- Conducting bootcamps and workshops at schools and colleges to promote space awareness and STEM-based learning.

Fig: Paper presentation at IAC 2025, Sydney

Fig: Interactive session with students

Fig: Outreach program with a high-school

Cansat Competition 2025

Video: Testing of CanSat Descent

Video: Launch at Virginia by AAS

Video: Workshop by Diganta

Video: Assembly of CanSat Learning Kit

The American Astronautical Society (AAS) has organized an annual **student design-build-launch competition** for space-related topics

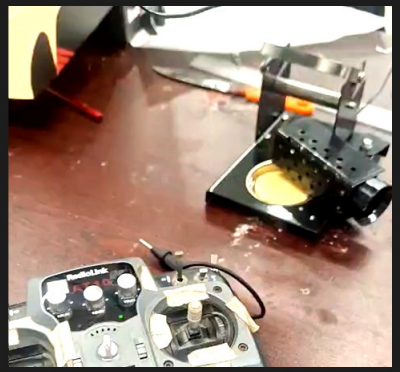
Research seed grant for innovation (RSGI)

An RSGI-funded project by BRAC University focused on developing a propeller-based rocket thruster.

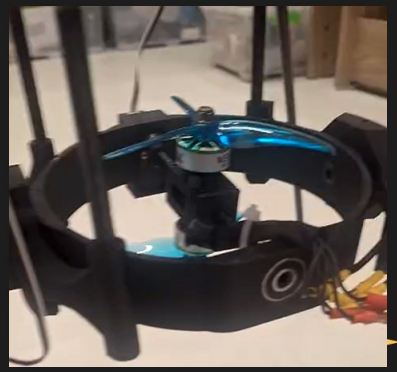
Publications:

- Design and optimization of propeller-based Thrust Vector Control mechanism using PID and sensor fusion techniques, International Astronautical Congress 2025, Sydney

Fig: Propeller based thruster with control system



Video: Four directional gyro control gimble



Video: Contrarotating BLDC thruster

Plan for 2025-26 and beyond

Vision

To make Bangladesh a regional hub for hands-on space systems education, innovation, and collaboration aligned with UNISEC-Global's mission.

Strategic Goals (2025–2030)

- Expand to 6+ universities and 100+ members
- Institutionalize CubeSat, CanSat, and Rocketry training
- Launch collaborative research on space edge computing
- Establish UNISEC-Bangladesh Foundation Fund

Key Initiatives

- National Space Training Network with LaSSET & IEEE AESS
- Annual HEPTA-Sat and CanSat workshops
- BRACU-Diganta 2.0 & Bangladesh CubeSat Initiative
- Space for All Festival and Women in STEM programs

THANK YOU